1137-68 QTc Interval Prolongation Predicts Mortality in Heart Transplant Recipients

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Background: Although QTc interval prolongation is considered a risk factor for adverse outcome in non-transplant populations, its predictive value in heart transplant recipients has not been studied yet.
Methods: QTc intervals were measured in 587 adult patients who underwent heart transplantation between May 1982 and January 2002. QT interval duration was determined by averaging 3 consecutive beats in all 12 leads of the standard ECG and corrected with the Bazett formula. Baseline ECGs were obtained within 7 days after transplantation, and the follow-up ECGs were recorded annually at the time of routine angiography. Data on donor and recipient characteristics, post-transplant clinical course, and immunosuppression were collected; biopsies were assessed for the presence of rejection; and angiograms were reviewed for the presence of transplant vasculopathy. Patients were followed over 7 ± 5 years (range: 3 months - 17 years).
Results: During follow-up, 241 patients died. The mean post-transplant QTc interval duration in these patients was comparable to the mean QTc interval in the remaining cohort (432 ± 26 ms vs. 423 ± 26 ms, p=0.07). However, patients with a relative increase in QTc duration of more than 10% between first and second post-transplant year (dQTc >10%) had a 6.7 times higher risk of dying when compared with patients with dQTc <10% (p=0.0005). Although the incidence of transplant vasculopathy was higher in the patients who died (51% vs. 33% in the remaining cohort, p=0.01), dQTc >10% was the only independent predictor of mortality on multivariate analysis (p=0.0008).
Conclusions: A relative increase in QTc interval duration of more than 10% between the first and second post-transplant year is a strong, independent predictor of mortality in heart transplant recipients.

1137-69 A Novel Long-Pentraxin PTX3, C-Reactive Protein, NT-Pro-BNP and Troponin-T During the First Six Months After Heart Transplant

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Background. PTX3 is a novel protein highly expressed by stimulated endothelium of coronary bed; it increases in plasma after MI, but it has not been studied in heart transplant (HTx). PTX3 might be involved in the complex immune response to HTx. **Methods**. PTX3 was assayed in 33 pts 52±18y(mean±SD) in serial blood samples starting from 41±33d after HTx, at the time of endomyocardial biopsy (EMB). C-reactive protein (CRP), N-terminal-proBNP (Nt-proBNP) and troponin-T (Tn-T) were assayed in 13/33 pts with at least 3 samples, followed-up for 99±18d after HTx with 81 EMB [1 to 8/pt]. Histologic rejection on EMP was graded by ISHLT. **Results**. 23 episodes of class 1/A and 1/B rejection were diagnosed with 7 episodes of 1/B treated with iv steroids.

Median plasma concentrations at time of EMB

EMB	PTX3 (ng/ml)	CRP(mcg/ml)	Nt-proBNP(pg/ml)	Tn-T(ng/ml)
	33 pts	13 pts	13 pts	13 pts
Neg	1.57	2.36	1350	<0.01
1/A	1.43	0.93	1033	<0.01
1/B	2.87	3.1	3780	0.053
upper normal	2.06	2.87	88 to 334	0.04

In a case of severe rejection leading to death, plasma PTX3 reached 3220 ng/ml. CRP, Nt-proBNP and Tn-T showed similar trends to PTX3 in relation to rejection. CRP was 84 ng/ml in a pt with Pseudomonas infection and EMB neg, while PTX3 was normal. Tn-T and Nt-proBNP tended to be higher the closer to HTx was the first blood sample and when HTx was done in emergency. Nt-pro BNP was supranormal in 95% of the cases, in absence of LV dysfunction (LVEF 61±9%). **Conclusions**. PTX3 and the other markers are higher in 1/B rejection. Early elevations of Tn-T might originate from cardiac ischemic insult during HTx, while high initial Nt-pro BNP might reflect marked up-regulation of natriuretic peptides during end-stage heart failure leading to HTx.

ORAL CONTRIBUTIONS

833 Heart Failure: Resynchronization Therapy

Monday, March 31, 2003, 4:00 p.m.-5:30 p.m.
McCormick Place, Room S403

4:00 p.m.

833-1 Quartile Analysis of the Baseline Aortic Preejection Interval as a Predictor of Response to Cardiac Resynchronization Therapy

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The baseline aortic pre-ejection interval (bAPEI) is a Doppler index of time measured between ventricular depolarization and onset of ejection. It was hypothesized that large values of bAPEI would predict response to cardiac resynchronization therapy (CRT) in the MIRACLE trial. **METHODS:** Patients with an atrio-synchronous biventricular pacing device and atrio-venticular delay optimized for mitral filling were randomized to CRT or control. Doppler echograms were recorded at baseline and 6 months for LV end-diastolic (EDV) and end-systolic (ESV) volume, and ejection fraction (EF), and analyzed by a core laboratory. NYHA class, 6-minute hall walk, Quality of Life and peak VO_2 were measured. **RESULTS:** Median quartile ranges of bAPEI were ≤131, ≤158 ≤183 and >183ms (n=306). Patients were grouped according to upper and lower quartile of bAPEI values, and 6-month changes in clinical and echo parameters were compared. Significance was determined by the Wilcoxon rank sum test. Table (*p<0.05 between CRT and control; +p<0.05 between bAPEI>183ms CRT and bAPEI</=131ms CRT). **CONCLUSIONS:** CRT patients with bAPEI>183 ms had significantly greater improvements in LVEDV, LVESV, LVEF, 6-minute hall walk, and Quality of Life than CRT patients with bAPEI ≤131ms. CRT patients with bAPEI ≤131ms had no difference in changes in 6-minute hall walk, Quality of Life, peak VO2, LVEDV, LVESV and LVEF than control patients with bAPEI ≤131ms. bAPEI may be useful for predicting the magnitude of response to CRT.

Median values; baseline to 6mo	bAPEI</=131ms Control (n=46)	bAPEI</=131ms CRT (n=36)	bAPEI>183 ms Control (n=28)	bAPEI>183 ms CRT (n=49)
NYHA	-0.3+/-0.6	-0.7+/-0.7 *	-0.1+/-0.6	-1.0+/-0.7 *
6-minute hall walk distance	-17+/-89	11+/-109	29+/-122	78+/-67 * +
Quality of Life	-7+/-22	-14+/-26	-10+/-23	-28+/-18 * +
Peak VO_2	-0.3+/-2.8	0.0+/-3.2	-0.2+/-3.2	1.4+/-3.0
LVEDV (cm^3)	-2+/-43	-7+/-44	16+/-52	-62+/-71 * +
LVESV (cm^3)	-5+/-44	-9+/-33	8+/-49	-64+/-68 * +
LVEF (%)	1.6+/-7.7	2.0+/-7.4	2.4+/-5.9	6.8+/-7.8 * +

4:15 p.m.

833-2 Resynchronization Does Not Change the Incidence of Ventricular Arrhythmias

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Cardiac resynchronization (CRT) improves the quality of life and functional capacity in moderate to severe heart failure patients with a wide QRS and an indication for an implantable cardioverter defibrillator (ICD). We assessed the results from a large-scale randomized trial to determine whether CRT changes the incidence of ventricular arrhythmias in this population. **Methods**. The Multicenter InSync ICD Randomized Clinical Evaluation (MIRACLE ICD) included heart failure patients in NYHA functional class II/III/IV, QRS duration≥130 ms, left ventricular ejection fraction ≤35% and a Class I indication for an ICD. Following successful implant of a system that combines biventricular pacing with ICD functionality, patients were randomly assigned to biventricular pacing on (CRT) or biventricular pacing off (Control) for 6 months. All patients had ICD treatment enabled. Comparisons of VT/VF episodes per month between Control and CRT during the randomization period were made using a large-sample comparison of incidence test, while the p-value for comparing the probability of experiencing an episode of VT/VF was calculated using the log-rank test. **Results.** A total of 282 patients were randomized to Control, and 272 patients to CRT. During the 6-month randomization period, 58 Control patients had 392 spontaneous VT/VF episodes, while 53 CRT patients had 415 spontaneous VT/VF episodes. There is no difference between groups in the probability of a spontaneous VT/VF episode occurring (p=0.75). Control patients averaged 0.30 episodes per month, compared with 0.33 monthly episodes for CRT patients (p=0.20). **Conclusion.** CRT appears neither to promote nor diminish the incidence of ventricular arrhythmias in patients with moderate to severe heart failure with a wide QRS and an indication for an ICD.